

A National Air and Missile Defense Shield, Is It Achievable?

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By CPT Steven D. Howard

### **A National Air and Missile Defense Shield, is it Achievable?**

The current air and missile defense systems afford the U.S. ample protection from a ballistic missile attack. In order to achieve this, however, this system must be able to integrate “land, sea, air, or space-based platforms to counter ballistic missiles in all phases of their flight”<sup>1</sup> and possess a “layered defense that provides multiple engagement opportunities along the entire flight path of a ballistic missile”<sup>2</sup>. However, the most important consideration is the actual feasibility of such a program. Measurable goals show how currently fielded weapon systems are capable of performing this mission. Currently, the U.S. has three systems capable of destroying ballistic missiles in flight.

These systems are PATRIOT, Theater High Altitude Area Defense (THAAD), and AGEIS Cruisers. The PATRIOT system is the U.S Army’s long-range, all-altitude, all-weather air defense system to counter tactical ballistic missiles, cruise missiles and advanced aircraft. With the inception of the new Patriot Advanced Capability (PAC-3) missile, there is an increased effectiveness against tactical ballistic (TBM) and cruise missiles, through the use of advanced hit-to-kill technology. PATRIOT’s missile guidance system enables target destruction through the kinetic energy released by hitting the target head-on. The AN/MPQ-53 phased array radar gives the PATRIOT system a range of up to 100 km, the capacity to track up to 100 targets, and can provide missile guidance data for up to nine missiles. The PATRIOT Radar can perform searches both

autonomously or the system can utilize external cueing from other land, air, space, or sea based sensors.

The THAAD system is the upper tier of the Army's two-tiered theater missile defense concept that works in concert with PATRIOT to detect, assign and destroy incoming TBMs with a lethal hit-to-kill interceptor. THAAD's upper tier intercept capability increases the effectiveness of current defenses: the missile intercepts the target at a greater range in both the endo- and exo-atmospheric altitude minimizing post-intercept debris over assets. The THAAD Radar can perform searches both autonomously or the system can utilize external cueing from other land, air, space, or sea based sensors.

The Navy Theater Wide (NTW) Theater Ballistic Missile Defense (TBMD) System is designed to "provide an exoatmospheric theater ballistic missile defense capability from AEGIS Weapon System (AWS).... The NTW system will provide an intercept capability against medium and long-range TBMs: (1) near the enemy TBM launch site to effect ascent phase intercepts; (2) along the TBM trajectory as it passes over water or along the coast to effect midcourse intercepts; (3) near the defended area to provide descent phase intercepts to achieve an additional layer of defense for lower tier systems."<sup>3</sup> These systems together can provide a protection similar to the proposed National Missile Defense System against a TBM threat.

The National Missile Defense System is a product managed by the Ballistic Missile Defense (BMD) Program just like PATRIOT, THAAD, and AGEIS. They all receive their funding from the BMD. The goal of the BMD system is a "layered defense that provides multiple engagement opportunities along the entire flight path of a ballistic

missile. [They] will explore and demonstrate kinetic and directed energy kill mechanisms for potential sea, ground, air, and space based operations to engage threat missiles in the boost, midcourse, and terminal phases of flight. In parallel, sensor suites and battle management and command and control (BMC2) will be developed to form the backbone of the BMD System.”<sup>4</sup> By comparing the currently fielded systems to this proposed system, we can see that the current systems already meet the requirements identified by LTG Kadish. However, in the future there will be an increased reason for the U.S. needing to address our need of a national missile defense system.

In a decade or two, the U.S. will face regimes that possess missiles armed with nuclear, chemical and biological warheads. What does the U.S. do about it? “If a nuclear missile were launched accidentally toward Washington, [D.C], there is absolutely nothing we could do to prevent the incineration of the city. The good news is that for the first time in history a ‘bullet-hitting bullet’ to shoot down that missile is within technological reach. The bad news is that this Administration has little interest in building it. Not to worry, says the Administration. There will be no ballistic missile threat to the United States before 2010. How do they know? The CIA assures us.... as it did about India.”<sup>5</sup> Three events since this report in the press have led the U.S. to reevaluate its vulnerability to ballistic missile threats.

The first was the July 15, 1998 release of the study by the Commission to Assess the Ballistic Missile Threat to the United States, known as the Rumsfeld Report. It described a potential threat much greater than previous intelligence estimates had suggested.

Concerted efforts by a number of overtly or potentially hostile nations to acquire missiles with biological or nuclear payloads pose a growing threat to the United States, its deployed forces, and its friends and allies. These newer, developing threats in North Korea, Iran and Iraq are in addition to those still posed by the existing ballistic missile arsenals of Russia and China, nations with which we are not now in conflict but which remain in uncertain transitions. The newer ballistic missile-equipped nations' capabilities will not match those of U.S. systems for accuracy or reliability. However, they would be able to inflict major destruction on the U.S. within about five years for a decision to acquire such a capability (10 years in the case of Iraq.) During several of those years, the U.S. might not be aware that such a decision had been made.<sup>6</sup>

The second event occurred on August 31, 1998, when North Korea tested a three-stage version of the Taepo Dong-1 missile. The North Korean government claimed the rocket launched a small satellite, but Western radar tracking the launch disputed this. Despite its failure, this launch surprised Western analysts.

The third event was in September 1999. The U.S. intelligence community, led by the Central Intelligence Agency, released the unclassified version of the National Intelligence Estimate (NIE): "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015." This estimate, the latest in a series begun in 1993, assessed the missile threats to U.S. security over the next 15 years and concluded that the U.S. could face ICBM threats from Russia, China, North Korea, and possibly Iraq in the next fifteen years. Now that the threat has been identified, the task is to

develop a missile defense system to deter or stop such an attack on the United States.

This calls for a system that meets the following criteria:

- (1) Has the ability to destroy a TBM, at minimum, during the mid-course phase
- (2) Compatibility with sea, land, and space based components.
- (3) Is cost effective.
- (4) Has “an interoperable and integrated, secure, and “smart” command, control, communications, computer, intelligence, surveillance, and reconnaissance (C4ISR) infrastructure that encompasses both strategic and tactical needs.<sup>7</sup>
- (5) System must also be capable of defending not only the United States, but also potentially our Allies and forward deployed military units.
- (6) Is all weather and capable of not only defensive, but also offensive operations.

Yet, the irony is that the U.S. already possesses these capabilities.

Currently, PATRIOT, THAAD and AGEIS have proven that they are capable of hitting a TBM. The PATRIOT PAC-3 missile has successfully completed eight flight tests. The most recent tests, 5 February 2000 and 22 July 2000, proved that the system could track and destroy both a ballistic missile target and a cruise missile. The THAAD system has proven that it can engage a missile in the endoatmosphere with its 10 June 1999 intercept. Then again, on 2 August 1999, the system was able to engage a separating target. The most recent test, on 25 January 2002, re-emphasized this. During this test, the AGEIS destroyer USS Lake Erie launched an intercept rocket into a dummy warhead fired from off Hawaii over the Pacific.

Moreover, the PATRIOT system is capable of destroying a missile while in the descent phase (just prior to impact). While this causes post-intercept spread debris over the U.S. asset, the damage was far less than would have occurred had the missile reached its ground target. It is a lower-tier system designed to intercept missiles within the atmosphere. It protects relatively smaller area (in the tens of kilometers) and is designed to destroy short-range missiles (launched from under 1,000 kilometers).

However, THAADs upper-tier intercept capability allows engagements in the endo- and exo-atmospheric altitude, thereby minimizing post-intercept debris over assets. It is a higher-tiered system designed to intercept at altitudes above 100 kilometers. It protects a larger area (in the hundreds of kilometers) and is designed to counter missiles with ranges up to 3,500 kilometers.

The AGEIS class ships are capable of destroying a missile in either the ascent phase (while the enemy rocket is burning or before it releases warheads), mid-course, or descent phase. Like THAAD, it is classified as an upper-tier intercept system (protection area equivalent to THAAD). It is designed to engage a target at a minimum altitude of eighty kilometers. So at a minimum, two of the three existing systems easily meet this requirement.

In order to meet the Congressional mandate that the system include sea- and space-based components, the cost for building and maintaining a new system would be astronomical. The proposed National Missile Defense system is projected to cost well over \$100 billion to build and operate a system that includes substantial space-based components. It would be based in Shemya, Alaska. The system calls for 100 interceptors



and the radar (along with personnel) to be located here. The interceptors, alone, cost \$14 billion. Also, the test cost \$100 million per.

However to build, deploy, and maintain additional THAAD and PATRIOT batteries would cost substantially less. Strategically placed throughout the continental United States, there would be the need for only an additional five Air Defense Artillery (ADA) Brigades (two Battalions consisting of five PATRIOT Batteries and one THAAD Battery each. This would call for an additional ten THAAD Batteries to combine with current ADA Brigades). There would be no need to budget for additional AGEIS missiles, since existing plans already account for expansion of the program (more than 50 cruisers and destroyers are at sea or under construction, and the support, training, and logistics infrastructure is already in place and operating). There would be no need to create a new MOS or branch in the Armed forces. This would become the mission of current CONUS assigned units. With BMDO trying to develop a NMD system without an overall increase in the defense spending, these systems would not call for an increase in funding. Only a shifting of priorities would be required.

PATRIOT, THAAD, and AGEIS are all interoperable and integrated. Each can receive or provide situational awareness to and from other radars and each other via the TADIL J link. The proposed NMD system would eliminate the need for three systems to talk to each other. However, it would still receive a possible cueing from one of these three systems, which would require it to have a TADIL J link capability.

Deployed as a battery, PATRIOT has a capable C3I system and THAAD has a capable C4I system. Yet when deployed as a PATRIOT battalion (5 batteries), along with a THAAD battery, this mix has an exceptional C4ISR system. AGEIS has a

capable, self-sustaining C4ISR system. The proposed NMD system too would have an exceptional C4ISR system.

All three systems are capable of not only offensive, but also defensive offensive operations (including protection of allied and forward-deployed military units).

Although, only THAAD and AGEIS are capable of destroying a TBM in both the endo- and exo-atmospheric altitude, each of the three systems are all weather, comparatively low-cost and have a hit-to-kill capability. Due to PATRIOT and THAAD's ability to protect forward deployed units, they are capable of supporting both offensive and defensive operations. In addition, AGEIS is able to provide a forward presence due to its ability to deploy to international waters. They are able to move around to counter threats from virtually anywhere in the world. With AGEIS, the need for base missile defense in other countries is eliminated. Yet, it is able to support both offensive and defensive operations for forward deployed forces, as well as the continental U.S. Because each of these systems' are deployed into any region or area of operation, they all are capable of defending allied nations. In fact, PATRIOT and AGEIS have already proven this by being deployed all over the world.

Yes the United States can deploy current weapon systems now that would defend the U.S. from a TBM threat. These systems would be able to complement each other so that together, they meet the needs to achieve continental air defense coverage: integrating land, sea, air, or space-based platforms to counter ballistic missiles in all phases of their flight, while saving the American public considerable money.

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